MAXIMUM WARTIME AGRICULTURAL PRODUCTION IN [redacted]

By

A Committee on Maximum Wartime Agricultural

Production in Ohio

Department of Rural Economics and Rural Sociology

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INTRODUCTION

During the spring of 1943 the Ohio Agricultural Experiment Station and the College of Agriculture of the Ohio State University were asked by the Bureau of Agricultural Economics, the United States Department of Agriculture, to prepare a statement as to the maximum wartime agricultural production capacity of Ohio.

In May a State Committee on Maximum Wartime Agricultural Production in Ohio was called together to sponsor and lay plans for the study. J. I. Falconer, Department of Rural Economics and Rural Sociology, Ohio State University and Ohio Agricultural Experiment Station, served as chairman. The membership of the committee consisted of representatives of the following organizations:

Ohio Agricultural Experiment Station
College of Agriculture, O.S.U.
Bureau of Agricultural Economics, U.S.D.A.
Soil Conservation Service
U.S.D.A. War Board - Ohio
Farm Security Administration

A work committee was given the responsibility of assembling the basic data and preparing the preliminary report. This preliminary report was presented to the committee as a whole in late July. The State Committee reviewed the report and after making a few changes approved it.

BASIC ASSUMPTIONS

In carrying out the study, certain basic assumptions were made:

1. That the objective was to develop the pattern for Ohio agriculture which would give the maximum output of human food nutrients during the war.

2. That to accomplish the above objective, it might be necessary temporarily to crop our farm lands even harder than they have been during the few years previous to 1943. This would result in a high rate of depletion and could not be long continued without diminishing output.

3. That this expansion in crop acreage should take place in those areas where, it is hoped, the damage done to the land would not be irreparable.

4. It developed in the course of the study that the soundest procedure to follow in Ohio would be to look forward to increasing the yields per acre rather than to expand the total acreage of depleting crops above that of 1943.

5. That, with a shortage of productive resources, there should be an expansion of those essential crops which are used directly for human consumption.

6. That the shortage of food and feed grains will necessitate adjustments in the allocation of feed to livestock and that this adjustment should be made on the basis of securing the maximum output of needed human nutrients. This will not necessarily involve drastic reductions in livestock numbers.

7. That prices, production incentives and regulations would be adjusted so as to encourage the recommended adjustments.

8. That the necessary labor, machinery, fertilizer, lime and other supplies as well as marketing facilities would be available was an assumption suggested by the Bureau of Agricultural Economics to all states engaged in the study.

TWO ESTIMATES CALLED FOR

Two estimates were called for: (1) the maximum possible production attainable by 1945 for crops and by 1946 for livestock, and (2) the degree to which production capacity could probably be attained in 1944. It should be noted that the maximum production of livestock is based on the 1945 probable production of crops.

The crop data are presented (1) for the state (2) for the western, northeastern and southeastern areas, and for 15 Land Resource Areas. The livestock data were computed on a state basis only.

As a crop producing area Ohio is far from homogeneous. The western area, with level to rolling glaciated soils of limestone origin, contrasts sharply with the non-glaciated sandstone and shale soils found in the hilly southeastern section and with the variable areas of glaciated soils in northeastern Ohio. To make reliable estimates of production possibilities requires that the major soil situations within the various sections be considered one by one.

In 1934 (revised 1937) Conrey, Paschall and Burrage published a generalized soil map of Ohio, dividing the State into six major and six minor areas (O.A.E.S. Spec. Cir. #44). In 1935 a committee on regional agricultural adjustments of the Ohio Agricultural Experiment Station and the Ohio State University, using this generalized soil map as a basis, divided the State into 14 areas for the purpose of setting up practical farming systems which would maintain the productivity of the soil at a profitable level over a long period of years. (See Mimeograph report on "A Basis for Regional Agricultural Adjustments in Ohio" - September 1935.)

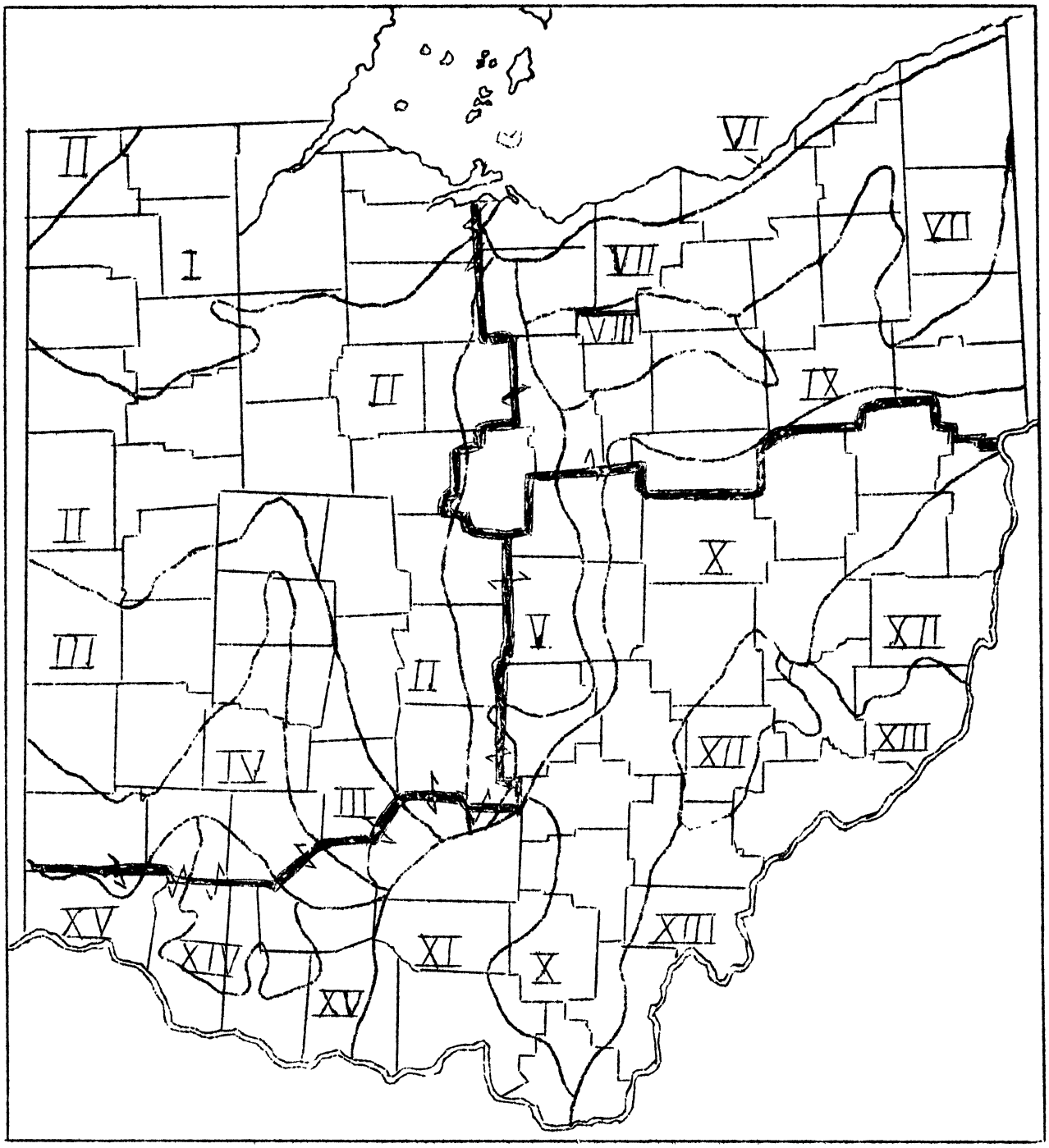
With the progress of soil conservation surveys since 1935, the Soil Conservation Service proposed that the present estimates be built up from analyses of the situations in 15 Land Resource Areas. (See Map). For each of these 15 Land Resource Areas, agronomists and soil conservationists prepared data on land in crops and on additional land that might be cropped. Considering soils, topography, and farming systems, varying amounts of idle cropland and permanent pasture were taken, along with cropland and rotation pasture, to develop the estimates of total land available for crops in each land resource area. Totals thus obtained were compared with the data from the 1930 and 1940 censuses, w ith the ideal set up in the 1935 study, and with 1940, 1941 and 1942 estimates of crop acreages made by the Crop Reporting Service.

Where adequate soil conservation surveys were available for an area, they provide an excellent basis for judgments as to possible adjustments in acreages and types of crops, but in a few cases the data were biased as a result of inadequate sampling. After careful study corrections were made to bring these in line with the census and crop reporting figures.

Next, figures on available cropland so obtained were assembled into the three areas, Western, Northeastern, and Southeastern Ohio. (See Map) The percent of each land resource area falling in each agricultural area was used in most cases in assembling the estimates. As errors in the estimates were introduced in some instances because soil and type of farming varied in different parts of some resource areas, graduated assignments, based on general knowledge of the conditions, were made in such cases. The final estimates of available acreages within each land resource area, each agricultural area, and in the state as a whole, are presented in Table 1.

The next procedure was to assign crops within the various land resource areas. Each soil type was considered separately, and divided between intertilled crops (including soybeans), grain crops, and sod crops (made up of hay and rotation pasture). After all soil types had been considered, areas in the three categories were summed, and are presented in percent for each crop class in Table 1 referred to above.

In proportioning the land to these three categories, the maximum considered feasible was assigned to intertilled crops, since these are the large feed and food producers. The acreage was limited by such considerations as degree o' fertility, erosion dangers, physical condition, type of livestock raised, and a



Map of Ohio showing three agricultural areas and fifteen land resource areas.

TABLE I. Estimates of acreages available for types of rotated crops in OHIO in 1945 including total area, intertilled crops, small grain, and hay and rotation pasture (In thousands of acres)

Area	Approximate extent of agricultural areas	Total acreage available for crops	Inter-tilled crops	Small grain	Hay and rotation pasture	Productivity ranking of soils (N)
STATE						
Acres		11768	5252	2945	3571	
Percent			44.6	25.0	30.4	
WESTERN OHIO						
Acres		6992	3573	1669	1750	
Percent			51.1	23.9	25.0	
NORTHEASTERN OHIO						
Acres		2192	742	710	740	
Percent			33.9	32.4	33.7	
SOUTHEASTERN OHIO						
Acres		2584	937	566	1081	
Percent			36.3	21.9	41.8	
LAND RESOURCE AREAS						
I. Acres	↑	1855	1007	420	428	2.7
Percent			54.3	22.6	23.1	
II. Acres		2837	1483	661	693	3.1
Percent			52.3	23.3	24.4	
III. Acres	W.	1332	662	332	338	2.9
Percent			49.7	24.9	25.4	
IV. Acres	↓	733	341	188	204	*
Percent			46.4	25.7	27.9	
V. Acres	↑	866	347	251	268	4.3
Percent			40.1	29.0	30.9	
VI. Acres		173	74	51	48	5.1
Percent			42.8	29.5	27.7	
VII. Acres	N.E.	702	225	208	269	W E
Percent			32.1	29.6	38.3	5.3 6.5
VIII. Acres		253	68	94	91	**
Percent	↓		26.9	37.2	36.0	
IX. Acres		913	301	335	277	3.9
Percent			33.0	36.7	30.3	
X. Acres	↑	744	240	166	338	6.5
Percent			32.3	22.3	45.4	
XI. Acres		262	121	48	93	7.4
Percent			46.2	18.3	35.5	
XII. Acres		334	80	67	187	5.5
Percent			24.0	20.0	56.0	
XIII. Acres		279	81	51	147	6.7
Percent	S.E.		29.0	18.4	52.7	
XIV. Acres		268	128	44	96	
Percent			47.8	16.4	35.3	
XV. Acres		221	98	29	94	
Percent			44.3	13.1	42.6	
XIV & XV. Acres	↓	489	226	73	190	5.3
Percent			46.2	14.9	38.9	

(N) Rankings on basis of "1" being the highest productivity, and 10 the lowest.
* Included with III. ** Included with VII.

Prepared by C. A. Lamb and G. W. Conrey, Department of Agronomy, Ohio Agricultural Experiment Station; H. B. Alger and H. H. Morse, Soil Conservation Service.

ilar practical factors. In some lands in southern Ohio corn cannot be grown successfully unless a sod crop immediately precedes it. On the other hand, corn may follow corn or soybeans in parts of northwestern Ohio with but moderate reduction in yield in the second crop. Thus, the apportionment to intertilled crops was highest in the level areas of northwestern Ohio, especially on the heavier soils.

Sod crops in rotation were kept to the minimum considered necessary to avoid ruining the land within four or five years. In some parts of the state sod must be included to keep enough organic matter in the soil to check disastrous erosion; in other sections it is essential to preserve sufficiently open structure to assure drainage and aeration. It must be emphasized, and may be stated unequivocally, that maintaining as low a proportion of the land in sod as estimated in Table 1 will result in much serious and some irreparable damage unless counteracting soil improving practices are soon reinstated. These capital losses in soil productivity are mortgages against the future.

Having assigned land to intertilled crops, grains, and sod, the next step was to apportion each category to specific crops (Table 4, Section 8). The intertilled area was divided among corn, soybeans, (for grain and for hay), potatoes, vegetables, sugar beets and tobacco. Wheat and oats made up such a preponderant part of the grain acreage that all other grains were lumped together. Hay and rotation pasture were left as a unit.

The next step was to estimate probable and possible yields and production for 1945. These again were built up from major soil types within each resource area, considering the basic soil and soil selection factors, crop distribution factors, assumed availability of labor, lime, fertilizer and equipment, and the possibilities from wider adoption of improved techniques, practices and materials.

In 1935, Ohio agronomists proposed a system of productivity balances (1935 Mimeograph, previously cited, and Ohio State University Agricultural Extension Service Bulletin 175, "Our Heritage, the Soil") by which the percentage change in productive capacity of the soil that may be expected to occur annually under a given cropping system and management might be expressed. In calculating these productivity balances for the rotated area of the entire state, J. A. Slipher presents the following:

1929 - productivity balance was - .65%
1935 - productivity balance was - .61%
1939 - productivity balance was - .51%
1941 - productivity balance was - .53%
1942 - productivity balance was - .61%
1943 estimated - productivity balance is - .67%

The trend toward lesser soil deterioration in the 1930's has been reversed in the early 1940's as the result of wartime crop production demands.

One of the most important factors affecting the present and future productive abilities of the soils of Ohio, are the kinds and proportions of crops grown on those soils. In Table 2 is presented the proportional distribution of major individual crops and types of crops within each of the three agricultural areas and within the state as a whole, for actual acreages of major crops in 1929, 1939, and 1942. Data for the 15 Land Resource Areas are given in Table 5, Section 8. For comparison the present estimates of probable crop distribution in 1945 are given alongside of the crop distributions suggested in 1935 by the committee on regional agricultural adjustments, when the basic objective was the development of farming systems that would maintain the productivity of the soil at a profitable level over a long period of years. This "ideal" crop distribution was never attained, the rapid rise in soybeans having resulted in marked trends away from the 1935 suggestions.

In general the proportion of intertilled crops (including soybeans) has risen, the small grain acreage decreased and the hay and rotation pasture decreased. With minor exceptions, the sod crop acreages are now considerably lower than recommended in 1935, and the estimates for 1945 tend to be at still greater variance. On the other hand, the intertilled crop acreage is generally higher than recommended and considerably higher where soybeans have come into wide use.

These trends present unsolved and critical problems in conservation and reconstruction of the soils of Ohio and the maintenance of a long-time system of profitable agriculture. It was in view of these trends that the recommendations for Ohio as regards crops were largely those that would increase yields, rather than expansion in the acreage of grain crops.

The shifts most likely to take place in wartime (more intertilled crops, including soybeans) will tend to speed up the rate of decline of soil productivity. The seriousness of this will only be realized in later years, but may be lessened primarily by greatly raising the use of lime and fertilizer, increasing the acreage of legume sod and soil improving crops, protecting and using more of the crop producing values of manure, and adopting simple erosion control practices during this war period.

Table 2 Distribution of crops in OHIO - Percents of rotated area

Area	Year	Corn	Soy-beans	Other intertilled crops: Potatoes	Vegetables	Sugar beets	Tobacco	Total	Oats	Wheat	Other small grain	Types of Crops: Intertilled crops	Small grain	Hay and rotation pasture
		Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.
STATE	1929	31.4	0.8	0.9	0.9	0.2	0.4	2.4	14.6	14.1	1.8	34.6	30.5	34.5
	1939	30.3	7.6	0.9	0.9	0.3	0.3	2.5	9.5	16.7	1.4	40.4	27.3	32.3
	1942	27.4	11.9	0.7	0.8	0.4	0.2	2.4	10.7	14.2	1.4	41.4	26.3	32.2
	1935	26.7	2.2	1.0	1.0	0.4	0.5	2.9	11.3	13.9	1.3	31.8	26.5	40.9
	1945	28.4	13.6	1.1	0.9	0.3	0.2	2.5	9.6	14.3	1.1	44.6	25.0	30.4
WESTERN OHIO	1939	32.8	9.3	0.4	0.9	0.6	0.3	2.2	9.4	17.6	1.2	44.1	28.2	27.3
	1942	29.1	15.2	0.4	0.8	0.8	0.1	2.1	10.6	14.3	1.2	46.2	26.1	27.7
	1945	30.8	17.9	0.5	1.2	0.6	0.1	2.4	9.2	13.5	1.2	51.1	23.9	25.0
NORTH-EASTERN OHIO	1939	23.2	6.0	2.6	1.5	0.1		4.2	14.0	17.3	1.3	33.4	33.5	35.1
	1942	24.7	8.8	1.5	1.3	0.1		2.9	15.4	16.3	0.3	34.1	32.7	33.2
	1945	21.1	8.8	2.9	1.0	x		3.9	15.6	15.6	1.3	33.9	32.4	33.7
SOUTH-EASTERN OHIO	1939	29.1	4.6	1.0	0.8		0.6	2.4	5.5	15.0	1.0	36.0	21.5	42.3
	1942	27.0	5.8	1.1	0.7		0.5	2.4	7.4	13.2	1.0	34.9	22.2	43.3
	1945	27.9	6.3	1.2	0.3		0.5	2.0	5.7	15.3	0.9	36.3	21.9	41.8

x Less than 1000 acres.

1929 - Census data. 1939 - Census data. 1942 - Preliminary data from Ohio Cooperative Crop Reporting Service. 1935 - Estimates of the distribution of crops in which the basic assumption was that the system proposed would maintain the productivity of the soil at a profitable level over a long period of years (See "A Basis for Regional Agricultural Adjustments in Ohio. Agr. Ext. Service, O.S.U., September 1935. Mimeograph Report). 1945 - Estimates of the distribution of crops during and immediately following the war.

Prepared by C. A. Lamb and G. W. Conrey, Department of Agronomy, Ohio Agricultural Experiment Station, H. B. Alger and H. H. Morse, Soil Conservation Service. June-July, 1943.

Crop Acreage

The suggested adjustments in crop acreage for the state are given in Form 1.(Data for Western, Northeastern and Southeastern Ohio are given in Section 9). Detailed study revealed very little acreage in the state that may be utilized for expansion of the total rotated crop land. Small amounts of the permanent pasture may be converted temporarily and part of the rotated pasture land might possibly be diverted to harvested crops on those few farms where the livestock are more than adequately provided with pasture. Some of the idle cropland may be put to use. The main reliance for increased crop production would therefore have to come from shifts in crops or from increasing the yields per acre.

It will be noted that the total acreage of cropland used for maximum production was estimated to be nearly the same as that of 1942 and 1943.

Corn: An increase in corn beyond the 1942 acreage was not recommended for the reasons stated under soybeans.

Soybeans: The maximum soybean acreage was set at 1,600,000 acres. This was 11 percent above that of 1942 and 73 percent above 1941. When the July 1 crop report figures became available, it showed an acreage of 1,598,000 for 1943. In considering the expansion of acreage of corn and small grain in Ohio it must be remembered that during the past 10 years there has been added 1,500,000 acres of soybeans to the cropping system. Soybeans in 1943 occupied 13.6 percent of the total rotated cropland in the state and represented an acreage nearly one-half that of corn. The increase in soybean acreage was placed in areas where the land is reasonably level and capable of producing fair yields.

Tobacco: The tobacco acreage, which is small in Ohio, was left at the acreage of 1943.

Sugar beets: The sugar beet acreage was estimated at 40,000 acres. This is approximately the acreage signed up in 1943. Wet weather and other factors ultimately cut this acreage in half by planting time.

Potatoes: The potato acreage of 1943 was increased by 35 percent. The increase was made largely in northeastern Ohio where the crop is now produced commercially. Assurances shouldbe given as to availability of fertilizer, spray materials, equipment and labor.

Vegetables: The acreage of fresh vegetables was increased by 67 percent; that for processing vegetables, 13 percent over 1943.

Wheat: The replacing of corn by soybeans, and the difficulty of harvesting soybeans in time to sow wheat is an item tending to hold down the wheat acreage. Preliminary statements from the Bureau of Agricultural Economics suggested a substantial reduction in wheat acreage in the corn belt. The committee did not agree with such a reduction in Ohio, and recommends that the wartime wheat acreage remain at essentially that of 1943. There were three reasons for this:

(1) The acreage assigned is the minimum required as companion crop for the seeding of meadows.

(2) There are actual shortages of soft red winter wheat. Flour from the soft wheats are superior for biscuits and bakery "sweet foods". They not only make superior products, but require less sugar and less shortening. Since wheats of this quality cannot be produced in the

Use of cropland		Reported for 1941	Reported for 1942	Expected in 1943	Wartime capacity in 1944	Wartime maximum capaci
Column	1	2	3	5	6	7
		1,000 acres	1,000 acres	1,000 acres	1,000 acres	1,000 acres
1. Corn, all	P	3,262	3,327	3,460	3,380	3,342
7. Soybeans, grown alone	P	923	1,440	1,598	1,600	1,600
8. Soybeans for beans	H	674	1,253	1,350	1,400	1,387
9. Soybeans for hay	H	221	158	228	190	213
20. Tobacco, all	H	24	22	21	20	20
22. Burley	H	11	12	14	14	14
23. Other domestic	H	13	10	7	6	6
25. Sugar beets	P	41	51	22	40	40
26. Irish potatoes	P	87	90	100	110	135
30. Processing vegetables, commercial	P	71	76	75	80	85
31. Green peas	P	6	8	8	9	10
32. Tomatoes	P	30	34	30	33	36
33. Sweet corn	P	30	32	29	30	31
34. Fresh vegetables, commercial	H	17	16	15	20	25
35. Cabbage	H	4	3	3	4	5
36. Onions	H	1	1	1	1	2
37. Celery	H	2	2	2	2	2
38. Carrots	H	2	2	2	3	4
39. Cantaloupes	H	3	2	2	3	3
40. Tomatoes	H	5	5	5	6	8
42. Popcorn	H	8	9	6	6	5
43. Total intertilled crops		4,433	5,031	5,297	5,256	5,252
44. Oats	P	1,224	1,300	1,300	1,200	1,132
45. Barley	P	43	60	44	50	53
46. Winter wheat	P*	2,018	1,767	1,643	1,680	1,680
47. Spring wheat	P	1	1	1	1	1
48. Oats for grain	H	1,181	1,264	1,251	1,160	1,103
49. Barley for grain	H	40	56	42	48	50
50. Grains cut green for hay	H	44	26	25	25	25
51. Rye for grain	H	72	97	86	80	70
56. Buckwheat	P	10	14	14	10	9
59. Total small grains		3,368	3,239	3,048 1/	3,021	2,945
60. Hay, all tame--except soybean, and small grain hay	H	2,162	2,138	2,194	2,200	2,206
61. Hay, all tame	H	2,427	2,322	2,447	2,415	2,444
62a. Seeds, not cut for hay	H	117	110	115	115	115
62. Seeds, hay and cover crop, all	H	326	254	308	328	328
63. Alfalfa	H	29	9	15	15	15
64. Red clover	H	225	169	220	240	240
65. Sweet clover	H	8	9	12	14	16
66. Alsike	H	21	14	18	18	18
68. Timothy	H	43	53	43	41	39
75. Rotation pasture		1,439	1,239	1,106	1,168	1,250
76. Total sod crops		3,718	3,487	3,415	3,483	3,571
77. Total cropland used		11,519	11,757	11,760	11,760	11,768
79. Idle cropland		918	845	845	835	826
80. Total cropland		12,437	12,602	12,605	12,595	12,594
81. Other plowable pasture		3,221	3,056	3,053	3,053	3,043
82. Wild hay	H	5	5	5	5	5
83. Other land in farms		6,245	6,245	6,245	6,255	6,266
84. Total land in farms		21,908	21,908	21,908	21,908	21,908

P = planted, H = harvested P* - planted previous fall

1/ Abandonment of wheat in 1943 was 40,000 acres larger than the average of the previous 2 yrs.

Great Plains, it appears unwise to curtail their production too drastically in Ohio and states having similar climatic factors favoring the production of soft wheats.

(3) So far as small grains in Ohio are concerned, winter wheat generally returns the most feed per acre.

Oats: The oat acreage was somewhat reduced. It was thought that if a reduction in the small grain acreage was to be made, it could best be made in oats since they produce less nutrients per acre than wheat.

Sod crops: Since an expansion in the dairy enterprise was recommended, it was not felt that the acreage of sod crops should be reduced. Sod crops are vital to Ohio agriculture in every section of the state. With the greatly reduced area devoted to them, it is essential that the best possible legumes and grasses be grown. Adequate liming and fertilizing and a shift to high value legumes, especially alfalfa, is to be strongly recommended. Soil depletion can be held to a minimum by doing everything possible to improve the quality of the sod. A sweet clover catch crop to plow down is also recommended for every possible place in the rotation. This will require abundant supplies of forage crop seeds. Present shortages are critical. Farmers in position to harvest seed of meadow forage crops should be encouraged to do so.

Yield Per Acre

In Ohio, increasing crop production from where we now stand depends largely upon the degree of adoption of practices and use of materials that affect yields per acre. Obtaining the maximum production per acre cannot be accomplished in a single season. It is the result of programs of soil building over periods of years. A list of positive and negative factors that may influence the obtaining of maximum yields is presented. Meadow crops are considered first because of their positive effects on crops that succeed them. The necessity for adequate supplies of lime and fertilizer applied prior to 1945 should be stressed again and again.

Yield Per Acre (Bu.)

	Corn	Wheat	Oats	Soybeans	Potatoes
1937 - 1941	44.9*	20.2	36.3*	19.2	104
1942	56.0	21.0	41.0	23.0	108
Possible 1945	57.0	23.7	36.4	21.8	150

*Corn and oat yields in 1937-'41 averaged about one-sixth larger than the 1930-'39 average.

Crop	Factors and Practices Operating to Effect INCREASES (+) in YIELDS per ACRE	Factors and Practices Operating to Effect DECREASES (-) in YIELDS per ACRE
MEADOW CROPS (Hay, Rotation Pasture, Soil Improvement)	Yield per acre +	Yield per acre -
	1. Keep lime usage at, and preferably go above, the record of 1,420,000 tons in 1942. Should be 3,000,000 tons for maximum production.	1. Lack of adequate labor and equipment for transporting and spreading lime.
	2. Increase the rate of application of fertilizer on companion crops.	2. Shortages of adapted varieties and strains of the better legumes.
	3. Seed more alfalfa, especially in mixtures with clover and grasses.	3. Fertilizer shortages.
	4. Use safer seeding practices to assure stands.	
	5. Cut at proper times to obtain maximum yields of protein.	
CORN	Yield per acre +	Yield per acre -
	1. Extend proportion of acreage in hybrids above 1942 level of 86 percent.	1. Because of the 1943 experience from delayed plantings (due to May and June rains) there will be a tendency to use earlier maturing and consequently slightly lower yielding hybrids in 1944-45.
	2. Shift to newer, higher yielding, insect and disease resistant hybrids.	2. Any disruption of the production of seed of corn hybrids.
	3. Raise the rate of planting.	3. Lower proportion of land in legume sod crops to be plowed for corn, more corn after corn or other grain crops.
	4. Drill rather than check-row.	4. Due to labor shortages, reduced livestock or both, less manure will be returned to the soil.
	5. Plow earlier and plant on time.	5. Labor shortages and worn-out and insufficient machinery will result in less thorough preparation of the seed bed.
	6. Double the state-wide use of fertilizer on corn (112,000 tons more than in 1941) - use more generally, raise the average acre rate from 69 lb. to 134 lb. per acre. Expect this to give a 10 percent increase (4-5 bus. per acre).	

Crop	Factors and Practices Operating to Effect INCREASES (+) in YIELDS per ACRE	Factors and practices Operating to Effect DECREASES (-) in YIELDS per ACRE
CORN (cont.)	7. On erodable lands, establish adequate sod waterways and plant corn on the contour. 8. In short high-grain rotations use sweet clover more generally.	6. Damage or losses due to weather may be greater wherever harvests are delayed by shortage of labor and equipment. 7. Inadequate supply of experienced labor discourages shifts to improved practices.
SOYBEANS	Yield per acre +	Yield per acre -
	1. Shift to higher yielding, higher oil-content varieties. 2. Earlier and more thorough preparation of seedbeds. 3. More general inoculation of the seed. 4. Applications of lime on acid soils. Soils below pH 6 and low in active calcium show gains of 4-8 bus. per acre after lime is applied. 5. Seeding in rows 21-28 inches apart makes for easier control of weeds, tends to result in less lodging, slightly earlier maturity and may give slightly higher yields. 6. High rates of fertilization of other crops in the rotation.	1. Gambling with uncertain varieties. 2. Delayed preparation of seedbeds. 3. Inadequate fertilization of the whole crop succession (in which soybeans are grown) resulting in reduced yields of soybeans. 4. Weed hazard on solidly drilled soybeans. 5. Losses at harvest due to delays and weather damage.

Crop	Factors and Practices Operating to Effect INCREASES (+) in YIELDS per ACRE	Factors and Practices Operating to Effect DECREASES (-) in YIELDS per ACRE
WHEAT	Yield per acre +	Yield per acre -
	1. Wider use of improved varieties. No great increase to be expected as Ohio is now highly standardized on improved varieties.	1. Delayed plantings.
	2. Increased rate of fertilization. (Raising the average rate of fertilization of wheat by 75 lbs. per acre over the 1941 level should raise the average yield of wheat by 1.8 bus. an acre and the succeeding hay crop by 250 lbs. One ton of additional fertilizer may be expected to give 51 bus. of wheat, 4.5 tons of hay, and residual effect on corn and soybeans.	2. Inadequate rates of fertilization.
	3. Use 4-6 tons of manure as a late fall or early winter top-dressing on wheat.	
	4. On erodable fields, leave sod waterways, and drill on the contour.	
OATS	Yield per acre +	Yield per acre -
	1. Shift to standard adapted varieties.	1. Poor preparation of seed beds, due to labor and machine shortage.
	2. Generally treat seed for smut.	2. Lodging and weather damage prior to harvest with combines. Oats are soft-strawed.
	3. Plant as early as soil can first be prepared in March and early April.	
	4. Use mineral fertilizer where meadow seedings are being made in the oats.	

Form 2 OHIO: Estimates of wartime crop yields per acre, 1944 capacity and maximum capacity, with comparisons

Crop		Unit	Yield per acre			
			Average for base period 1/	Probable in 1944	Probable on maximum acreage 1945 2/	Maximum possible 1945 3/
Column	1	2	4	5	6	7
			Units	Units	Units	Units
1. Corn, all	P	Bu.	44.9	47	49	57
5. Soybeans for beans	H	do.	19.2	19.5	19.8	21.8
14. Burley tobacco	H	Lb.	915	850	850	950
15. Other domestic tobacco	H	do.	1003	1000	1000	1100
17. Sugar beets	P	Ton	7.5	8.0	8.5	9.5
18. Irish potatoes	P	Bu.	104.4	107.0	110.3	150.3
Processing vegetables:						
22. Green peas	P	Ton	.64	.6	.6	.7
23. Tomatoes	P	do.	6.0	6.0	6.0	7.0
24. Sweet corn	P	do.	1.7	1.7	1.7	1.9
Fresh vegetables:						
25. Cabbage	H	do.	7.4			
26. Onions	H	100 lb.	162.0			
27. Celery	H	Crate (90 lb)	261.0			
28. Carrots	H	Bu. (50 lb)	520.0			
29. Cantaloupes	H	Crate (60 lb)	90.0			
30. Tomatoes	H	Bu. (56 lb)	183.0			
31. Oats for grain	H	Bu.	36.3	34.4	34.4	36.4
32. Barley for grain	H	do.	26.3	26.0	26.0	28.0
33. Winter wheat	P	do.	20.2	20.5	20.7	23.7
34. Spring wheat	P	do.	19.1	19.0	19.0	22.0
35. Rye for grain	H	do.	15.8	15.0	15.0	17.0
40. Buckwheat	P	do.	16.4	16.4	16.4	17.0
43. Hay, all tame	H	Ton	1.38	1.30	1.35	1.50
Seeds:						
44. Alfalfa	H	Bu.	.86	1.00	1.15	1.25
45. Red clover	H	do.	.96	1.00	1.00	1.20
46. Sweet clover	H	do.	2.19	2.20	2.30	2.50
47. Alsike	H	do.	1.34	1.50	1.60	1.80
49. Timothy	H	do.	3.13	3.00	3.00	3.20
55. Wild hay	H	Ton	.9	.9	.9	.9

P = planted, H = harvested

1/ 1937 - 1941.

2/ Probable yields with amounts of fertilizers and practices likely to be used by farmers.

3/ Maximum yields obtainable by using the soil and crop management practices recommended by the Agricultural Experiment Station and Agricultural Extension Service for use in wartime.

The estimates of maximum livestock numbers and production in 1946 are based on the probable yield per acre on the maximum acreage of crops in 1945 and not on the maximum possible yields per acre. Were it possible to put into effect the necessary practices to achieve these larger maximum yields the production of livestock products under "Wartime Maximum" would be about one-seventh greater than the figures presented in Form 3.

Estimates of feed in the crop years 1941-1944 and for wartime maximum production and net supply of feed grains and roughages available for the feeding of livestock are shown in Form 4; estimated numbers of livestock and the production of livestock products for the years 1942 to 1946 are given in Form 3; and estimates of feed grains and hay needed by livestock in Form 5, summary.

Livestock in 1946, Based on Probable Yields in 1945

Horses: Because of the increasing average age of horses, the small number of colts being raised, and an increasing use of tractor equipment, a continuing decline in the total number of horses, mules and colts was foreseen. By 1946 this number was estimated at 330 thousand head, a 17 percent decline from the Ohio total on January 1, 1943. This would release considerable quantities of grain and hay for other livestock. For the "maximum" period, it is suggested that a reduction be made in the amount of hay fed per horse and that greater use be made of cheaper roughages.

Milk cows: It was felt that milk cow numbers should be increased approximately one percent per year for the three years following January 1,1943, rather than have the numbers continue to increase at the 1940-1943 rate of about 2 percent annually. This would be accompanied by a program of culling the low producers in many herds and some increases in the feeding of grain and hay. As shown in Form 3, cow numbers would increase 3 percent, total milk production 6 percent. Total feed-grain consumption by cows would be up 8 percent (Form 5) and the amount of hay fed was estimated to be increased 5 percent.

Beef cattle: It was figured that the number of beef cattle put on feed would be reduced 17 percent below their present 1943 numbers and that there would also be some reduction in the amount of grain fed per head. By 1945-46 the amount of feed grains going to this class of livestock would be reduced 34 percent below the 1942-43 level. One reason for not reducing the number of grain-fed cattle a greater extent was the desirability of having uniform seasonal market receipts of cattle.

Other cattle: These, including dairy heifers under two years, dairy calves, beef cows and other beef stock, were estimated at 1,020,000 head on January 1, 1946, a 7 percent increase over the number of these cattle in January 1943. This would provide a considerable increased quantity of marketable beef animals, fed on very light grain rations and making maximum use of roughages and pasture.

Sheep: Feeder sheep and lambs were reduced from 364,000 in January 1943 to 325,000 under wartime maximum conditions. In 1942 a total of 207,000 lambs were shipped into the state. If numbers of native grown lambs put in feed lots for winter feeding were maintained, then the number to be shipped into the state would decline by approximately 20 percent. The feed per head of all feeder lambs would be maintained at present levels.

Sheep in wether flocks kept only for wool would be reduced; total numbers of ewes and ewe lambs (1,434,000 and 307,000 head respectively) would be maintained at January 1943 levels so that all stock sheep (other than feeders) would show only a 1 percent decline.

Hogs: Maximum net liveweight production of hogs in the year beginning October 1, 1945 was estimated at 83 percent of the 1,338 million pounds produced in the year beginning October 1, 1942, and the number to be marketed would be about 10 percent less. The desirable weight for hogs to be sold in the maximum period was put at 220 pounds compared with 238 pounds in the current 12 months period. With Ohio feed supplies as estimated on July 1 to be available for the year beginning October 1, 1943 it appears that the number of brood sows for fall farrowing (June 1 to December 1, 1943) may be reduced below the official June 1 estimate. This liquidation is under way, according to reports received from extension specialists.

Poultry: Compared with 1943, a 2 percent increase in number of hens and pullets and a 5 percent increase in total egg production was established as the wartime maximum. The estimated number of chickens to be raised was reduced 11 percent below the high 1943 level, commercial broilers were reduced 12 percent, while number of turkeys was practically maintained.

OHIO: Estimates of wartime production of livestock and livestock products, 1942 - 1945 and maximum capacity

Livestock	Unit	1942	1943	1944	1945	Wartime maximum 1/	Percent of 1943
Horses, mules & colts, Jan. 1	thousands	425	398	374	352	330	83
Milk cows, 2 yrs. +, Jan. 1	thousands	1,073	1,094	1,110	1,120	1,130	103
Cattle put on feed, year beginning previous Oct. 1	thousands	149	150	125	125	125	83
Other cattle & calves, Jan. 1	thousands 2/	910	952	980	1,000	1,020	107
Feeder sheep & lambs, Jan. 1	thousands	375	364	345	325	325	89
Other sheep & lambs, Jan. 1	thousands	1,928	1,939	1,917	1,915	1,915	99
Sows farrowing, spring	thousands	459	551	455	445	445	81
Sows farrowing, fall	thousands	432	450	405	395	395	88
Hog production, during year beginning previous Oct. 1	million lbs.	1,119	1,338	1,260	1,137	1,116	83
Av. weight hogs sold	pounds	228	238	225	220	220	92
Hogs produced	thousands	4,908	5,622	5,600	5,168	5,073	90
Hens & pullets, Jan. 1	thousands	20,674	22,541	22,500	23,000	23,000	102
Chickens raised during yr.	thousands	33,592	36,951	34,000	33,000	33,000	89
Commercial broilers raised	thousands	3,300	3,400	3,300	3,200	3,000	88
Turkeys raised during year	thousands	896	941	950	950	950	101
Milk cows, av. during year	thousands	1,056	1,078	1,096	1,109	1,116	103
Milk production	million lbs.	5,037	5,142	5,261	5,362	5,468	106
Milk per cow	pounds	4,770	4,770	4,800	4,835	4,900	103
Egg production	million doz.	211	230	230	235	242	105

1/ Based on probable feed production in 1945.

2/ Includes dairy heifers under 2 yrs., dairy calves, beef cows, other beef stock, and bulls.

Form 4 OHIO: Estimates of local supply of feeds available for livestock and for other purposes, by crop years, 1944-45 and maximum, with comparisons

Item	Unit	1941-42	1942-43	1943-44	1944-45	Maximum
Column		1	2	3	4	5
Feed grains						
Corn, all:						
1. Carry-over begin. crop year 2/	1000 bu.	7,206	13,345	19,327*	12,885*	10,737*
2. Production (inc. gr. in silage)	do.	160,974	185,752	141,450	158,860	163,758
3. Total supply	do.	168,180	199,097	160,777	171,745	174,495
4. Seed (1/7 - 1/6 bu. per A.)	do.	475	499	486	560	560
6. Net supply	do.	154,360	179,271	147,406	160,448	163,198
Oats:						
10. Carry-over begin. crop year 2/	do.	7,366	7,300	8,810	5,190	5,190
11. Production	do.	51,374	51,824	44,410	39,938	37,943
12. Total supply	do.	58,740	59,124	53,220	45,128	43,133
13. Seed (2 bu. per acre)	do.	2,600	2,600	2,400	2,264	2,264
15. Net supply	do.	48,840	47,714	45,630	37,674	35,679
Barley:						
16. Carry-over begin. crop year 2/	do.	93	94	186	110	110
17. Production	do.	1,140	1,428	987	1,248	1,300
18. Total supply	do.	1,233	1,522	1,173	1,358	1,410
19. Seed (2 bu. per acre)	do.	120	88	100	106	106
21. Net supply	do.	1,019	1,248	963	1,142	1,194
Wheat:						
22. Fed on farms where grown	do.	11,755	11,586	13,500	6,500	6,500
23. Other wheat fed	do.	500	10,000	1,500	1,500	1,500
24. Rye fed on farms where grown	do.	866	1,154	838	682	682
25. Net supply of feed grains	1000 tons	5,419	6,493	5,353	5,382	5,429
26. Total needed for livestock	do.	4,665	5,190	4,962	4,706	4,701
27. Available for other purposes 5/	do.	754	1,303	391	676	728
Other farm-produced concentrates						
33. Soybeans fed, farms where grown	1000 tons	16	17	16	15	15
Hay						
35. Carry-over begin. crop year 2/	1000 tons	385	300	348	390	300
36. Total hay production	do.	3,329	3,663	3,674	3,144	3,303
38. Total supply	do.	3,714	3,963	4,022	3,534	3,303
40. Net supply	do.	3,414	3,615	3,632	3,234	3,303
41. Total needed for livestock	do.	3,435	3,455	3,446	3,240	3,244
Other roughages						
44. Corn silage production	1000 tons	1,127	1,133	1,130	1,140	1,175
47. Corn stover	do.	2,500	2,300	2,200	2,200	2,200

* Based on Ohio corn carry-over as 4.3% of estimated U.S. carry-over. (Ohio carry-over Oct. 1, 1930 - '39 was 4.3% of U.S.)

2/ May 1 for hay, June 1 for barley, July 1 for oats, October 1 for corn.

5/ Available for food, industrial use in the state, and outshipments.

OHIO: Estimated quantities of feed grains and hay needed for livestock for 12 months periods beginning October 1, 1942 - 1944 and maximum 1/

Class of feed and livestock	1941-42	1942-43	1943-44	1944-45	Wartime maximum	
	1,000 tons	1,000 tons	1,000 tons	1,000 tons	1,000 tons	Percent of '42-43
Feed grains						
Horses, mules and colts	284	266	250	235	220	83
Milk cows, 2 yr.+	759	774	785	792	836	108
Feeder cattle	173	174	125	115	115	66
Other cattle and calves	304	318	328	334	341	107
Feeder sheep and lambs	20	19	18	17	17	89
Other sheep and lambs	63	63	62	62	62	98
Hogs	2,237	2,676	2,520	2,274	2,233	83
Hens and pullets	496	541	540	552	552	102
Chickens raised	286	314	289	280	280	89
Commercial broilers	8	8+	8	8	8-	88
Turkeys	35	37	37	37	37	100
Total feed grains	4,665	5,190	4,962	4,706	4,701	91
Hay						
Horses, mules and colts	638	597	561	440	412	69
Milk cows	1,685	1,718	1,743	1,758	1,808	105
Feeder cattle	68	69	58	58	58	84
Other cattle and calves	601	628	647	550	561	89
Feeder sheep and lambs	38	36	34	32	32	89
Other sheep and lambs	405	407	403	402	373	92
Total hay	3,435	3,455	3,446	3,240	3,214	94

1/ See Form 3 for numbers and net production of livestock.

Numbers of Farm Workers

Fewer farmers and members of their families working on farms in April and June 1943 than in April and June 1942, and a decrease in the number of hired workers (regular and seasonal) so far in 1943, leads one to believe that there will continue to be a shortage of farm workers. Additional tractors, combines, corn pickers, buck rakes, milking machines and other labor-saving machinery in 1944 and 1945 will make possible some savings in the number of workers required. The capacity of the farmers and their families will be greatly increased if they can buy the additional tractors and other machines that are needed.

By 1945 it is estimated that there will be more acres in vegetables and more dairy cows. To attain maximum production better care would have to be given. These additional requirements for labor would probably more than equal the time saved by the addition of machinery.

The most serious shortage in numbers may be in the supply of seasonal help. Labor will be needed for such peak-load tasks as fruit and vegetable harvest, corn cutting and husking. The figures on numbers of farm workers (Form 6) does not adequately reflect the farm labor situation. There has been a marked deterioration in the quality of farm labor, due to age, inexperience and other factors. One of the most aggravating shortages in the labor field is the inability of many to secure such services as trucking, feed grinding and skilled labor for machinery repair.

Farm Machines and Implements

The 1942 harvesting season for soybeans and corn, and the 1943 planting season for these crops in Ohio have shown how short the time may be, in occasional seasons, for getting certain necessary jobs done. More tractors, combines, corn pickers and power-drawn tillage equipment would have helped in getting these operations done on time. As it was, some of the 1942 soybeans and corn were not harvested, and some cropland was not planted in 1943. Thirty counties in Ohio were short of combines in 1942. The numbers of each machine to be in use during 1944 and 1945 listed in Form 7 would help insure timely planting and harvesting, and adequate care for the acreages of crops shown in Form 1 for those years.

It is also important that plenty of repair parts be available at all local implement stores, and that men for servicing machinery and equipment be available. Considerable worry and loss of time have been caused by a lack of repairs and service men during 1942 and 1943.

Much equipment made to be drawn by horses is being drawn by tractors. This will shorten the life of these machines, and they should be replaced as soon as possible by equipment made to stand the higher speed of the tractor.

Machinery listed in Form 7 represents numbers in actual use or to be in use. It is assumed that the total number to be manufactured will be sufficient to cover replacements of old machines as well as to give the increase in numbers to be used during the years specified in Form 7. A number of the horse-drawn machines are marked "less" for 1945 in Form 7. This means that few replacements will be necessary in 1945 as old machines are worn out.

Form 6 OHIO: Assumed numbers of farm workers that will be employed on farms in 1944 and estimated numbers that would be needed for attainment of maximum production capacity, with comparisons

	Farm Workers	January	April	June	July	September	October
	Column	1	2	3	4	5	6
		100 workers	100 workers	100 workers	100 workers	100 workers	100 workers
	Employed on farms in 1942:						
1.	Farmers and their families	2,400	2,775	2,850	2,850	2,710	2,700
2.	Hired, regular and seasonal	365	600	850	1,000	750	800
3.	Total farm workers	2,765	3,375	3,700	3,850	3,460	3,500
	Employed or expected to be employed in 1943:						
4.	Farmers and their families	2,405	2,696	2,750	2,750	2,700	2,700
5.	Hired, regular and seasonal	330	530	760	900	700	750
6.	Total farm workers	2,735	3,226	3,510	3,650	3,400	3,450
	Assumed to be employed in 1944:						
7.	Farmers and their families	2,400	2,690	2,750	2,750	2,700	2,700
8.	Hired, regular and seasonal	300	500	730	870	670	720
9.	Total farm workers	2,700	3,190	3,480	3,620	3,370	3,420
	Estimated needs for maximum production:						
10.	Farmers and their families	2,400	2,690	2,750	2,750	2,700	2,700
11.	Hired, regular and seasonal	300	530	760	900	700	750
12.	Total farm workers	2,700	3,220	3,510	3,650	3,400	3,450

Form 7 OHIO: Assumed number of specified farm machines and implements that will be on farms in 1944 and estimated number that would be needed for attainment of maximum production capacity, with comparisons

Kind of machine or implement	On farms Jan. 1, 1942	For use in 1943 season	For use in 1944 season	Needed for maximum production 2/
Column	1	2	3	4
	1,000 machines	1,000 machines	1,000 machines	1,000 machines
1. Farm tractors	105	111.3	115.3	120
Tractor drawn or mounted:				
2. Moldboard plows	98	103.8	107.6	109
3. Disk plows	1	1	1.1	1.1
4. Disk harrows	90	95.4	99	105
5. Mowers	16	18.4	20.3	28
6. Grain drills	19	18.6	18.4	20
7. Grain binders	19	17.9	17.5	17
8. Combines	10.5	13.2	14.5	16.2
9. Windrow pick-up balers	1.4	1.8	2	2.8
10. Listers and middlebusters	.1	.1	.1	0
11. Corn pickers	9.2	10.7	11.7	15.7
12. Row crop cultivators 1/	65	74.8	81.9	90
13. Row crop planters	6	6.4	6.6	10.4
14. Row crop binders	6	6	6.3	6.8
Horse drawn or operated:				
15. Walking moldboard plows, 1 horse	30	28.8	28.2	less
16. Walking moldboard plows, other	165	158.4	156.8	"
17. Riding moldboard plows	60	55.2	53.4	"
18. Riding disk plows	.5	.5	.4	"
19. Disk harrows	55	52.2	51.2	"
20. Mowers	140	133	130.2	"
21. Sulky or dump rakes	80	77.6	76.8	"
22. Side delivery rakes	76	76.8	78.3	80
23. Grain drills	115	110.4	110.4	110.4
24. Grain binders	80	74.4	71.2	less
25. Listers and middlebusters, walking	.2	.2	.2	0
26. Listers and middlebusters, riding	.1	.1	.1	0
27. Row crop cultivators, walking, 1 horse	110	107.8	106.7	106.7
28. Row crop cultivators, walking, 2 horse	25	24	24	less
29. Row crop cultivators, riding	143	137.3	134.4	"
30. Row crop planters, 1 horse	9	8.7	8.7	8.7
31. Row crop planters, 2 horse and larger	130	123.5	122.2	122.2
32. Row crop binders	39	37.1	36.3	less
33. Hay balers, stationary horse operated	.7	.6	.6	"
34. Manure spreaders, horse and tractor	95	92.2	92.2	97
Miscellaneous power machines:				
35. Stationary power balers	1.6	1.5	1.5	1.5
36. Grain separator-threshers	10	9.1	8.7	less
38. Cream separators	80	80	80	80
39. Milking machines, installations	11	14.7	16.1	17.7

1/ Does not include field cultivators, such as rotary hoes, duck-foot cultivators, and rod weeders.

2/ In addition to these machines there will need to be 3000 more buck rakes and 4000 more tractor drawn rotary hoes than were used in 1943. Also more sprayers and dusters.

Lime and Fertilizers

In Form 8, column 5, are given the estimated quantities of lime and fertilizers for maximum crop yields as shown under Form 2, column 7. The applications of these fertilizers would not insure these crop yields. Production practices would have to be improved at the same time. Average weather conditions are assumed.

Lime usage in Ohio:

1932	-	103,000 tons
1933	-	122,000
1934	-	158,000
1935	-	176,000
1936	-	319,000
1937	-	353,000
1938	-	318,000
1939	-	431,000
1940	-	814,000
1941	-	1,145,000
1942	-	1,420,000

Consequences of failure to use lime:

If lime is used at the 1942 level during the five-year period of 1943-47 inclusive, production of food and feed crops might be increased by 8 to 10 percent, assuming other factors are held constant.

If the use of lime were terminated in 1943, by 1948 yield reductions of 5 percent might be expected, assuming other factors are held constant. Also if use of lime were reduced or terminated, quality of foods and feeds would be so adversely affected that livestock and livestock products would have lowered nutrition values.

In order to supply needed nitrogen for crop and livestock production, a greater acreage of leguminous forage crops is needed in Ohio. To get this cheap nitrogen and organic matter, the use of lime on farms should be further raised beyond the 1942 level.

To raise the rotated cropland and the open permanent pasture on which a lime spreader and mowing machine can be used to a clover-alfalfa-white clover level would require an immediate application of 25,000,000 tons of ground limestone and 1,750,000 tons annually thereafter to maintain the soils at that level of legume production and nitrogen-gathering.

The figures below indicate the probable percentage increases in yields by 1948 from an average application of 2 tons of ground limestone in 1943 to rotated cropland needing lime to grow clover and alfalfa successfully:

Alfalfa	-	100-120%
Red Clover	-	75-100%
Soybeans	-	25-30%
Corn	-	20-25%
Wheat	-	10-15%
Oats	-	0-5%

Experimental evidence in Ohio shows that on one-third of the acreage, soybeans respond markedly to applications of lime but only slightly to fertilizer.

Probably the average yield of soybeans in Ohio could be raised by 1.5 to 2.0 bushels per acre by applying adequate supplies of lime to those soils of pH 6 or lower, at the rate of 1.5 to 2.5 tons per acre.

One of the most serious aspects of reduced lime use is that an accumulative deficiency would be built up at the rate of 1.5 million tons per year from natural causes only - leaching and crop removal..

Significance of increased fertilizer usage on field crops in Ohio:

1.* By increasing fertilizer usage on corn by 65 pounds per acre, (from 69 to 134 pounds per acre) the following gain may be expected on the basis of Ohio experience:

Approximately 17,500,000 additional bushels of corn from 112,000 additional tons of fertilizer or at a fertilizer cost of $.20-$.25 per bushel.

2.* By using 62,000 additional tons of fertilizer on small grains in which meadow seedings are made, the following gains may be expected:

(a)	270,000 additional tons of hay	
(b)	2,300,000 additional bus. of wheat	$5,700,000 worth of feeds from
(c)	1,130,000 additional bus. of oats	$2,000,000 spent for fertilizer

Also the above additional fertilizer on 1,250,000 acres being planted in later years to soybeans would give residual effects of at least .8 bus. per acre or 1,000,000 bus. of soybeans.

If corn production in 1945 and 1946 is to be maintained at high levels, the soil improving and sod crops sown in the summer or fall of 1943, and spring of 1944 must be more generally and more adequately fertilized. In Ohio the bulk of this fertilizer must be applied at the time of seeding the wheat, oats or barley.

3. Any sensible plan for using fertilizers to effect production of feed crops in Ohio will anticipate the needs of the sod crops, and will project a program at least 2 or 3 years into the future.

4. If the production of dairy products is hampered by lack of feeds in early 1944, the quantity of such products could be significantly affected in April and May, by topdressing good permanent pasture sods in the late winter or early spring with nitrogen carriers. If 22,000 acres (0.5% of Ohio's permanent pasture) were topdressed with 30 lbs. of nitrogen per acre, (1700 tons of 20% N carrier), the production of dairy products might be increased by 7,000,000-8,000,000 pounds of milk, or 12 lbs. of milk per pound of topdressed nitrogen.

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* Comparisons are with 1941 usage.

Form 8 OHIO: Assumed quantities of lime, fertilizer, and hay and cover crop seeds that will be available for use in 1944 and estimated quantities needed for attainment of maximum production capacity, with comparisons

	Item	Unit	Used in 1942	Expected to be used in 1943	Assumed to be available for use in 1944	Needed for maximum production 1/
	Column	1	2	3	4	5
1.	Lime	1000 tons	1,420	1,100	1,500	3,000
	Fertilizer, amount used & most usual analysis:					
		1000 tons	135	150	160	224
2.	Corn	Analysis	2-12-6	2-12-6	2-12-6	4-10-6
		1000 tons	5	6	16	40
3.	Soybeans	Analysis	0-14-6	0-14-7	0-14-7	0-12-12
		1000 tons	30	35	50	70
4.	Irish potatoes	Analysis	6-8-6	4-8-8	4-8-8	5-10-10
		1000 tons	17	20	22	28
5.	Truck & canning	Analysis	2-12-6	4-10-6	2-12-6	4-10-6
		1000 tons	9	7	8	10
6.	Fruit crops	Analysis	20-0-0	20-0-0	20-0-0	20-0-0
		1000 tons	165	170	180	215
7.	Wheat	Analysis	0-14-7	2-12-6	2-12-6	4-10-6
		1000 tons	32	34	36	45
8.	Other small grains	Analysis	0-14-6	0-14-7	0-14-7	0-14-7
9.	Permanent pasture &	1000 tons	24	20	24	30
	semi-perm. hay land	Analysis	Super P	Super P	N & S.P.	N & 0-14-7
		1000 tons	45	51	51	57
10.	All other 2/	Analysis				
	Total	1000 tons	462	493	547	739
	Hay and cover crop seeds:					
11.	Alfalfa	1000 bu.	42	45	50	53
12.	Red clover	do.	118	119	119	121
13.	Sweet clover	do.	62	71	79	79
14.	Alsike	do.	10	10	10	10
15.	Lespedeza	1000 lb.	900	900	900	900
16.	Timothy	1000 bu.	105	106	106	107
17.	Other tame grasses 3/	1000 lb.	500	500	500	500

1/ Under assumption set forth in "A Guide for an Appraisal of Agriculture's Maximum Wartime Production Capacity" and to obtain the crop yields shown in Form 2, Column 7.

2/ Includes sugar beets, tobacco, home gardens, lawns, etc.

3/ Includes orchard grass, rye grass, brome grass, etc. but not Kentucky blue grass or white clover.

PRICES

Price is an important factor in determining the extent of and the direction of agricultural production. The following are some suggestions as to the price policy which would encourage the development of Ohio agriculture along the line indicated by this report.

(1) With milk, the present spread between costs and the price received should be widened so as to increase the relative profitableness of dairying.

(2) A premium should be paid for hogs of 200 to 225 pounds weight.

(3) Further inducements should be given to the potato growers.

(4) It would be a worth-while program for farmers to be given a subsidy in the way of providing ample supplies of fertilizer, lime and legume seed at low prices.

PRODUCTION IN 1944

Estimated acreages of corn, soybeans and hay are practically up to the maximum in 1944, as shown in Table 3. Potatoes and fresh vegetables (commercial) need to be expanded about one-fourth above the 1944 acreage to attain the maximum. Crop yields estimated as probable in 1944, with the exception of oats and a few minor crops, are higher than the yields for 1937 to 1941 inclusive. The 1944 probable acre yields are, however, much below the estimated maximum possible for 1945. Corn yields are 17 percent less than the possible maximum, soybeans 10 percent less, wheat 14 percent less and potatoes 29 percent less. Increasing the yields per acre, therefore, offers the possibility of considerable increase in output of food and feeds. It is unfortunate that the lime application in 1943 could not be kept up or increased above the 1,420 thousand tons applied in 1942. An application of 1,500 thousand tons is the goal for 1944.

Cows and hens, in 1944, are within 2 percent of maximum. Milk and egg production, in 1944, are within 4 and 5 percent, respectively of the maximum. Hog production in 1944 would be reduced from the high numbers of 1943.

Table 3. Estimates of acreages, numbers and production

Commodity	Unit	1942	1943	Wartime capacity 1944	Wartime capacity Probable Maximum	Percentage 1944 of 1942	Percentage 1944 of Probable Maximum
Crop acreages:							
Corn, all	1000 a.	3,327	3,460	3,380	3,342	102	101
Soybeans, all	do.	1,440	1,598	1,600	1,600	111	100
Potatoes	do.	90	100	135	135	122	81
Processing veg.,Com.	do.	76	75	80	85	105	94
Fresh veg., Com.	do.	16	15	20	25	125	80
Wheat planted	do.	1,768	1,644	1,681	1,681	95	100
Oats planted	do.	1,300	1,300	1,200	1,132	92	106
Hay, all tame	do.	2,322	2,447	2,415	2,444	104	99
Crop production:							
Corn	1000 bus.	185,752	141,450	158,860	163,758	86	97
Soybeans for grain	do.	28,819	25,920	27,300	27,463	95	99
Potatoes	do.	9,180	9,114	11,770	14,890	128	79
Wheat	do.	36,205	26,392	34,460	34,797	95	99
Oats	do.	51,824	44,410	39,938	37,943	77	105
Hay, total	1000 T.	3,663	3,674	3,144	3,303	86	95
Livestock:							
Cows kept for milk	1000 head	1,073	1,094	1,110	1,130	103	98
Hens and pullets	do.	20,674	22,541	22,500	23,000	109	98
Milk production	million lb.	5,037	5,142	5,261	5,468	104	96
Egg production	million doz.	211	230	230	242	109	95
Hog production, yr. begin previous Oct. 1	million lb.	1,119	1,338	1,260	1,116	113	112

SOILS AND CROP DATA, 15 LAND RESOURCE AREAS.

Soils and Topography

G. W. Conrey.

Area I.

This area, largely of level topography, includes the lake plain region of northwestern Ohio. In general its soils are among the most productive of the state, although there are some sandy areas of low productivity. Although the natural drainage of much of the area was originally very poor, a large proportion is now adequately drained artificially. Soil erosion is a minor factor in this area. However, deterioration in physical condition in the fine textured soils has been a major factor in reduced crop yields.

The most extensive soils are dark colored soils of fine texture, including Brookston clay and clay loam, Paulding clay and Toledo silty clay. Plainfield and Newton fine sands are of limited extent.

Area II.

This area has a level to gently rolling topography. Light colored silt loams and silty clay loams make up over half the area, with interspersed areas of dark colored soils. The area in the northwestern part of the State, largely in Williams, is more nearly like adjacent parts of Michigan and Indiana rather than the nearby parts of Ohio. The land is more rolling, and near the State line includes loam and clay loam soils.

The gently rolling lands of the area are subject to serious erosion where used for intertilled. For this reason a considerable area is maintained in permanent pasture. Deterioration in physical condition is a problem in the silty clay loam soils of the area, although it is not as serious a problem as in the clays and silty clays of Area I.

The leading soils are the light colored Miami and Crosby silty clay loam and dark colored Brookston and Clyde silty clay loam.

Area III.

The topography of the area varies from level to gently rolling. The soils, which are derived from glacial limestone material, are in general somewhat coarser in texture than those of Area II. Sheet erosion is serious on gently sloping lands where row crops are being grown.

The main soil types are the light colored Miami and Crosby silt loam, and dark colored Brookston and Clyde silty clay loam.

Area IV.

This area has an undulating to gently rolling topography. Much of it is characterized by long gentle slopes, which present conditions favorable for serious sheet wash. Although the soils are derived from glacial limestone material (Early Wisconsin Drift), they are leached to somewhat greater depth than the soils of Areas II and III. Light colored soils predominate.

The dominant soil types include Russell and Fincastle silt loam. Terrace soils on second bottoms along the Miami and Mad Rivers are chiefly Fox silt loam, whereas Genesee silt loam is the most extensive flood plain soil.

Area V.

This is a transition area between the glacial limestone soils to the west, and the glacial sandstone and shale soils of east central and northeastern Ohio. The western part of the area is gently undulating as are the lands to the west, the eastern part is gently rolling. The soils have heavy to moderately heavy subsoils. They are acid in reaction and generally less productive than the soils of Area II to the west. Losses of soil by erosion are slight to moderate, the most serious losses by sheet erosion being in the more rolling lands in the eastern half of the area.

The chief soil types are Cardington and Bonnington silt loam, light colored soils, and Marengo silty clay loam, a dark colored soil.

Area VI.

This is the lake plain area of northeastern Ohio, a narrow belt bordering Lake Erie. The topography varies from level to gently sloping, with numerous low ridges and knolls. There is a wide range in soils both in color and texture. Most of the soils are acid in reaction. Erosion is a minor problem. Some of the sandy areas show evidence of wind action.

The leading soils are Painesville fine sandy loam, and Caneadia loam and clay loam, light colored soils, and Lorain clay loam and silty clay, dark colored soils. Berrien and Plainfield fine sand are the chief soils of the sandy areas.

Area VII.

This area of level to gently rolling lands is characterized by soils with very heavy subsoils, although the surface soils range from silt loams to silty clay loams. These soils are derived from glacial shale and sandstone material low in lime, and are very acid in reaction. Because of the tight, relatively impervious subsoil the soils are difficult to drain, and also because of low permeability to water, are subject to erosion even on moderate slopes. A significantly shorter growing season east of Cuyahoga County results in a lower percentage of the area being in corn, and is one factor in the extensive utilization of the crop for silage.

The leading soils are Ellsworth and Mahoning silt loam and silty clay loam, and Trumbull silty clay loam.

Area VIII.

The topography of the area varies from undulating to gently rolling, with a considerable proportion of gently rolling land. The soils, which are intermediate in texture between those of Areas VII and IX, are derived from low lime glacial sandstone and shale material. They are acid in reaction. Although somewhat more pervious than the soils of Area VII, erosion is a greater problem because of the steeper slopes.

The dominant soils are Wayne, Rittman and Wadsworth silt loams.

Area IX.

This area, with a rolling to gently rolling topography, includes pervious soils that are acid in reaction. They are derived from noncalcareous glacial sandstone and shale material. Erosion is a serious hazard in the production of intertilled crops on the sloping lands.

Wooster, Canfield and Ravenna silt loams are the major soil types.

Area X.

This area, with a rolling to hilly topography, is in the unglaciated part of the Appalachian Plateau. The soils are residual from sandstone and shale. Several wide valleys (Tuscarawas, Walhonding, Muskingum, etc.) are the sites of extensive terrace and flood plain soils. Practically all of the soils of the area are acid in reaction. Because of the rolling topography, erosion is serious in the production of intertilled crops. The steeper lands can best be utilized for pasture or for forestry.

Muskingum silt loam is the chief soil on the uplands, Chenango loam and silt loam occur on the gravel terraces, and Pope and Huntington silt loams on the stream floods.

Area XI.

This area includes some of the most hilly lands of the State. The upland soils, in general residual from sandstone, are acid in reaction. Much of the land is too steep for cultivation. A large part of the area is in woods. More of the non-productive and badly eroded lands should be taken out of farming and utilized for forestry. The erosion hazard on cultivated lands is extreme.

A large part of the agricultural production of this area is on the Scioto river bottoms, and the Ohio river terrace and flood plains.

The dominant upland soil is Muskingum silt loam. Genesee silt loam occurs on the Scioto river bottoms, Wheeling silt loam on the terrace, and Huntington silt loam on the flood plain of the Ohio River.

Area XII.

This area includes rolling to steep limestone lands. The soils are residual from interbedded limestone, sandstone and shale. Excellent bluegrass pastures are a distinguishing feature of the area. Near the Ohio river the land is strongly rolling to very steep. Because of the heavy grass cover on much of the land, erosion is not as serious problem as in Area X, although where the land is used for rotation crops there is a great hazard.

Westmoreland silty clay loam, the most extensive soil, is a mixed soil, including areas of Brooke silty clay loam, a residual limestone soil, and Muskingum silt loam.

Area XIII.

This area is rolling to very rough and hilly. Especially near the Ohio river is the land steep and broken. The soils include "red clay land", derived from red clay shale, and limited areas of "red limestone land", formed from interbedded limestone, and red clay shale. Erosion is a very serious problem

throughout the area. Hillside slips are a common feature, and severe gullying often follows the slumping of the land.

Upshur clay, derived from red clay shale, is the most extensive soil. Meigs silty clay loam, is derived from interbedded red clay shale, shale and sandstone. Belmont silty clay loam is the "red limestone land", derived from interbedded red clay shale, limestone and sandstone.

Area XIV.

The topography of this area varies from level to gently sloping. The soils, which are derived from deeply weathered old calcareous glacial drift (Illinoian), are of low productive capacity. The level areas have very poor drainage, shallow surface ditches being used for the removal of excess surface water. Erosion is a serious problem on the sloping areas.

The most extensive soil on the level areas is Clermont Silt loam, Avonburg and Rossmoyne silt loam occurs on the sloping areas.

Area XV.

The topography of this area varies from level to strongly rolling or steep. The upland soils are derived from deeply weathered calcareous glacial drift (Illinoian). These soils are highly leached, acid in reaction, and of relatively low productivity. Drainage ranges from excellent to very poor. Because of the silty nature of the soils, erosion is a very serious problem on sloping areas.

Adjacent to the Ohio river and the major tributary streams the land is steeply sloping with many slopes of over 40% and with 300 to 500 feet relief. The soils on these steep slopes are residual from calcareous shale and limestone. With a high natural fertility, these steep lands are utilized for the production of Burley tobacco, corn, meadow and for pasture. Erosion is very serious, if the land is used for intertilled crops for more than one year.

A gently rolling to rolling upland area in central Adams County includes residual limestone soils.

The most extensive upland soils are Cincinnati and Rossmoyne silt loam, while Fairmount silty clay loam occurs on the steep slopes. Bratton silt loam is the chief residual limestone soil of the upland.

Table 4 Estimates of acreage available for specific rotated crops in OHIO in 1945
(In thousand of acres)

Area	Approximate extent of agricultural areas	Corn	Soybeans			Potatoes	Vegetables (commercial)	Sugar beets	Tobacco	Oats	Wheat	Other Grains
			Total	Grain	Hay							
ENTIRE STATE												
Acres		3342	1600	1387	213	135	110	40	20	1132	1681	132
Percent		28.4	13.6	11.8	1.8	1.1	0.9	0.3	0.2	9.6	14.3	1.1
WESTERN OHIO												
Acres		2158	1246	1179	67	38	81	40	6	643	945	81
Percent		30.8	17.9	16.8	1.0	0.5	1.2	0.6	0.1	9.2	13.5	1.2
NORTHEASTERN OHIO												
Acres		464	191	119	72	64	22	x		341	341	28
Percent		21.2	8.8	5.4	3.3	2.9	1.0			15.0	15.6	1.3
SOUTHEASTERN OHIO												
Acres		720	163	89	74	33	7		14	148	395	23
Percent		27.9	6.5	3.4	2.9	1.2	0.3		0.5	5.7	15.3	0.9
LAND RESOURCE AREA												
I.												
Acres	WESTERN	536	379	365	14	15	50	32		200	200	20
Percent	WESTERN	28.6	20.4	19.7	0.7	0.8	2.7	1.7		10.8	10.8	1.1
II.	WESTERN											
Acres	WESTERN	867	575	562	13	13	18	8		305	327	29
Percent	WESTERN	30.6	20.3	19.8	0.5	0.5	0.6	0.3		10.7	11.5	1.0
III.	WESTERN											
Acres	WESTERN	478	167	158	9	4	7		5	80	235	17
Percent	WESTERN	35.9	12.5	11.9	0.7	0.3	0.5		0.4	6.0	17.6	1.3
IV.	WESTERN											
Acres	WESTERN	254	80	60	20	2	4		1	25	151	12
Percent	WESTERN	34.6	10.9	8.2	2.7	0.3	0.6		0.1	3.4	20.7	1.6
V.												
Acres		171	160	135	25	10	6	x		104	138	9
Percent		19.7	18.5	15.6	2.9	1.1	0.7			12.0	15.9	1.0

Table 4 (cont.) Estimates of acreage available for specific rotated crops in OHIO in 1945
(In thousand of acres)

Area	Approximate extent of agricultural areas	Corn	Soybeans			Potatoes	Vegetables (commercial)	Sugar beets	Tobacco	Oats	Wheat	Other Grains
			Total	Grain	Hay							
VI.	NORTHEASTERN											
Acres		36	27	10	17	4	7	x		23	26	2
Percent		20.8	15.6	5.8	9.8	2.3	4.0			13.3	15.0	1.2
VII.												
Acres		134	62	45	17	22	6			110	86	12
Percent		19.1	8.8	6.4	2.4	3.1	0.9			15.7	12.3	1.7
VIII.												
Acres		51	15	5	10	2	x			42	49	3
Percent		20.2	5.9	2.0	4.0	0.8				16.6	19.4	1.2
IX.												
Acres		212	40	16	24	40	9			144	181	10
Percent		23.2	4.4	1.8	2.6	4.4	1.0			15.8	19.8	1.1
X.												
Acres		212	18	1	17	9	1			52	106	8
Percent		28.5	2.4	0.1	2.3	1.2	0.1			7.0	14.3	1.1
XI.	SOUTHEASTERN											
Acres		99	20	6	14	2	x		x	7	39	2
Percent		37.8	7.6	2.3	5.3	0.8				2.7	14.9	0.8
XII.												
Acres		70	8		8	2	x		x	22	43	2
Percent		21.0	2.4		2.4	0.6				6.6	12.9	0.6
XIII.												
Acres		65	9		9	5	2		x	12	37	2
Percent		23.3	3.2		3.2	1.7	0.7			4.3	13.3	0.7
XIV & XV.												
Acres		163	40	24	16	5	4		14	6	63	4
Percent		33.3	8.2	4.9	3.3	1.0	0.8		2.9	1.2	12.9	0.8

x = Less than 1000 acres

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Table 5 Distribution of crops - OHIO - Percents of rotated area

Land Resource	Year	Corn	Other intertilled crops					Total	Oats	Wheat	Other small grain	Types of crops			Productivity ranking of soils(N)
			Soybeans	Potatoes	Vegetables	Sugar beets	Tobacco					Intertilled crops	Small grain	Hay and rotation pasture	
		Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	
I	1929	32.2	0.5					2.4	25.4*	12.7*		35.0	38.1	24.5	2.7
	1939	31.7	10.9	0.6	1.8	1.6		4.0	14.2	16.1	1.1	46.6	31.4	22.0	
	1942	26.4	20.3	0.4	1.6	1.9		3.9	15.6	12.1	1.5	50.6	29.2	20.2	
	1935	28.0	1.5					3.5	19.8*	12.7*		33.0	32.5	32.2	
	1945	28.6	20.4	0.8	2.7	1.7		5.2	10.8	10.8	1.1	54.2	22.7	23.1	
II	1929	32.3	1.1					1.0	18.3*	12.9*		34.4	31.7	32.4	3.1
	1939	31.4	11.3	0.2	0.4	0.3		0.9	10.0	16.4	1.1	43.6	27.5	28.9	
	1942	27.3	17.8	0.3	0.5	0.3		1.1	10.8	14.1	0.9	46.2	25.8	28.0	
	1935	27.5	2.5					1.5	13.8*	12.9*		31.5	28.7	40.3	
	1945	30.6	20.3	0.5	0.6	0.3		1.3	10.7	11.5	1.0	52.3	23.3	24.4	
III	1929	37.0[c]	0.5					2.3[c]	12.3*[c]	17.1*[c]		39.8[c]	29.4[c]	30.2[c]	2.9[c]
	1939	37.8	5.3	0.3	0.5	0.1	1.4	2.3	4.5	21.8	1.5	45.3	27.9	26.8	
	1942	32.4	7.9	0.3	0.4	0.1	0.7	1.-	6.9	16.2	0.9	41.0	24.0	34.1	
	1935	30.0[c]	3.0					2.5[c]	9.0*[c]	18.1*[c]		35.5[c]	27.1[c]	36.8[c]	
	1945	35.9	12.5	0.3	0.5	x	0.7	1.5	6.0	17.6	1.3	49.8	24.9	25.4	
IV	1929	[c]	[c]						*[c]	*[c]		[c]	[c]	[c]	[c]
	1939	37.3	4.4	0.3	0.6			0.9	1.0	21.5	1.7	42.5	24.0	33.4	
	1942	38.5	5.7	0.3	0.5		0.3	1.1	3.5	17.6	2.3	45.1	23.3	31.6	
	1935	[c]	[c]						*[c]	*[c]		[c]	[c]	[c]	
	1945	34.6	10.9	0.3	0.6		0.1	1.0	3.4	20.7	1.6	46.4	25.7	27.9	
V	1929	30.4	1.3					1.2	13.0*	15.3*		37.9	28.3	37.7	4.3
	1939	24.4	9.0	0.9	0.7			1.6	11.9	17.2	1.1	36.1	30.1	33.8	
	1942	21.6	15.4	0.6	0.7	0.1		1.4	12.7	14.2	1.6	41.4	28.3	30.3	
	1935	25.4	2.5					1.5	11.0*	14.0*		29.4	25.0	44.5	
	1945	19.7	18.5	1.1	0.7	x		1.8	12.0	15.9	1.0	40.1	29.0	30.9	

Table 5 (cont.) Distribution of crops in OHIO - Percents of rotated area

Land Resource Area	Year	Corn	Soy-beans	Other intertilled crops: Pota-toes	Vege-tables	Sugar beets	Tobac-co	Total	Oats	Wheat	Other small grain	Types of crops: Inter-tilled crops	Small grain	Hay and rotation pasture	Produc-tivity ranking of Soils (V)
		Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	
VI	1929	20.9	0.3					10.6	16.4*	17.2*		31.8	36.6	32.5	5.1
	1939	25.3	8.0	2.7	6.7	0.7		10.1	11.3	16.0	1.3	42.7	28.7	28.7	
	1942	21.0	17.5	2.0	6.2	0.5		8.7	12.3	15.0	2.5	47.3	29.9	22.9	
	1935	19.8	1.0					11.0	18.0*	16.0*		31.5	29.0	37.4	
	1945	20.8	15.6	2.3	4.0	x		6.0	13.3	15.0	1.2	42.3	29.5	27.7	
VII	1929 W+	22.7	0.3					3.4	16.6*	17.5*		26.4	34.1	37.9	5.3
	E+	19.9	0.5					3.2	18.1*	6.1*		23.6	24.2	48.2	6.5
	1939	21.1	6.9	2.4	1.3			3.7	15.2	9.9	1.7	31.9	26.7	41.5	
	1942	21.0	9.4	1.7	0.8			2.7	16.3	12.1	2.7	32.9	31.2	35.9	
	1935 W+	21.4	1.0					4.0	14.0*	16.0*		27.4	30.3	42.0	
	E+	19.5	1.0					3.5	17.0*	6.0*		24.0	23.0	49.4	
	1945	19.1	8.8	3.1	0.9			4.1	15.7	12.5	1.7	32.0	29.6	38.3	
VIII	1929	oo	oo	oo				oo	oo*	oo*		oo	oo	oo	
	1939	23.2	4.1	0.8				0.3	15.1	19.9	1.2	28.6	36.1	35.3	
	1942	22.8	6.7	0.5	0.2			0.7	16.5	18.8	1.6	29.9	36.9	33.2	
	1935	oo	oo	oo				oo	oo*	oo*		oo	oo	oo	
	1945	20.2	5.9	0.3	x			0.8	16.6	19.4	1.2	26.9	37.2	36.0	
IX	1929	22.0	0.2					3.6	16.4*	21.1*		25.8	37.5	36	5.9
	1939	25.1	3.3	2.9	1.3			4.2	15.6	18.6	1.3	32.6	35.5	32.0	
	1942	23.2	4.2	2.1	1.1			3.2	16.7	17.6	2.0	30.6	36.3	33.1	
	1935	20.0	1.0					4.0	13.0*	19.0*		25.0	32.0	41.6	
	1945	23.2	4.4	4.4	1.0			5.4	15.8	19.8	1.1	33.0	36.7	30.3	
X	1929	21.9	0.4					1.3	12.0*	16.1*		23.6	28.1	49.3	6.5
	1939	24.9	2.7	1.0	0.3			1.3	6.2	15.5	1.0	28.8	22.8	48.4	
	1942	24.2	2.7	0.9	0.3			1.2	7.8	14.1	1.1	28.1	23.0	48.9	
	1935	20.0	1.0					1.5	10.0*	15.0*		23.4	25.0	53.5	
	1945	28.5	2.4	1.2	0.1			1.3	7.0	14.3	1.1	32.3	22.3	45.4	

Table 5 (cont.) Distribution of crops in OHIO - Percer[illegible] rotated area

Land Resource Area	Year	Corn	Soy-beans	Other intertilled crops: Pota-toes	Vege-tables	Sugar beets	Tobac-co	Total	Oats	Wheat	Types of crops: Other small grain	Inter-tilled crops	Small grain	Hay and rotation pasture	Productivity ranking of soils (N)
		Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.
XI	1929	38.8	1.4					3.1	6.0*	11.6*		42.3	17.0	37.6	7.4
	1939	38.9	6.6	0.8	0.4		0.4	1.6	0.4	18.4	0.8	47.1	19.7	33.2	
	1942	36.1	7.2	0.9	0.4		0.2	1.5	3.2	15.7	0.6	44.8	19.5	35.7	
	1935	31.0	2.0					3.5	5.0*	11.0*		36.5	16.0	46.2	
	1945	37.8	7.6	0.8	x		x	0.8	2.7	14.9	0.3	46.2	18.3	35.5	
XII	1929	22.8	0.7					2.0	10.8*	6.1*		25.5	17.6	57.7	5.5
	1939	22.1	2.3	0.7	0.3		x	1.0	7.0	10.0	0.7	25.8	17.4	56.9	
	1942	19.6	1.5	0.7	0.3		x	1.0	9.5	9.2	0.1	22.1	19.1	58.8	
	1935	22.0	1.0					2.0	9.0*	8.0*		25.0	17.0	58.7	
	1945	21.0	2.4	0.6	x		x	0.6	6.6	12.9	0.6	24.0	20.0	56.0	
XIII	1929	30.0	2.7					4.8	6.8*	8.1*		37.5	14.9	49.5	6.7
	1939	25.2	4.4	1.6	1.3		x	2.8	2.8	11.6	0.8	32.4	15.2	52.4	
	1942	22.7	3.8	1.5	1.6		x	3.1	6.4	10.8	0.4	29.6	17.6	52.8	
	1935	27.0	4.0					5.0	5.0*	7.0*		36.0	12.0	53.9	
	1945	23.3	3.2	1.7	0.7		x	2.4	4.3	13.3	0.7	29.0	18.4	52.7	
XIV & XV	1929	36.4	2.3					4.8	4.4*	10.7*		43.5	15.1	41.9	5.3
	1939	39.8	6.6	0.9	1.3		2.5	5.7	0.2	12.5	0.9	52.1	13.6	34.3	
	1942	34.5	8.9	0.9	1.1		2.3	4.3	1.4	10.9	1.3	47.7	13.6	38.7	
	1935	29.0	5.0					5.0	3.0*	10.0*		39.0	13.0	47.5	
	1945	33.3	8.2	1.0	0.8		2.9	4.7	1.2	12.9	0.8	46.2	14.9	38.9	

(N) Rankings are on the basis of "1" being the highest productivity and "10" the lowest.
o Area 3 and 4 taken together; * Includes all spring or all winter grain
+ Area VII divided W-West of Cleveland, E-East of Cleveland; oo Included with Area VII; x Less than 1000 acres
1929 and 1939 - Census data.
1942 - Preliminary data from Ohio Cooperative Crop Reporting Service.
1935 - Estimates of the distribution of crops in which the basic assumption was that the system proposed would maintain the productivity of the soil at a profitable level over a long period of years (See "A Basis for Regional Agricultural Adjustments in Ohio. Agricultural Extension Service, O.S.U. Sept. 1935. Mimeographed Report.)
1945 - Estimates of the distribution of crops during and immediately following the war.

Use of cropland	Acreage	Reported for 1941	Reported for 1942	Wartime maximum capacity
Column	1	2	3	7
		1,000 acres	1,000 acres	1,000 acres
1. Corn, all	Planted	2,056	2,097	2,158
7. Soybeans, grown alone	do.	667	1,102	1,246
8. Soybeans for beans	Harvested	577	1,037	1,179
9. Soybeans for hay	do.	75	52	67
20. Tobacco, all	do.	13	10	6
22. Burley	do.	x	x	
23. Other domestic	do.	13	10	6
25. Sugar beets	Planted	41	50	40
26. Irish potatoes	do.	24	25	38
30. Processing vegetables, commercial	do.	67	69	75
31. Green peas	do.	6	7	9
32. Tomatoes	do.	30	33	34
33. Sweet corn	do.	27	27	26
34. Fresh vegetables, commercial	Harvested	5	4	6
35. Cabbage	do.	1	1	1
36. Onions	do.	x	x	x
37. Celery	do.	x	x	x
38. Carrots	do.	x	x	x
39. Cantaloupes	do.	2	1	2
40. Tomatoes	do.	2	2	3
42. Popcorn	Harvested	7	7	4
43. Total intertilled crops		2,880	3,364	3,573
44. Oats	Planted	750	801	643
45. Barley	do.	35	48	42
46. Winter wheat	do.	1,256	1,065	945
47. Spring wheat	do.			
48. Oats for grain	Harvested	731	788	633
49. Barley for grain	do.	33	45	40
50. Grains cut green for hay	do.	17	10	9
51. Rye for grain	do.	36	53	37
56. Buckwheat	Planted	3	4	2
59. Total small grains		2,080	1,971	1,669
60. Hay, all tame--except soybean, and small grain hay	Harvested	939	927	980
61. Hay, all tame	do.	1,031	989	1,056
62a. Seeds, not cut for hay	do.	74	68	70
62. Seeds, hay and cover crop, all	do.	233	167	235
63. Alfalfa	do.	28	9	15
64. Red clover	do.	162	113	180
65. Sweet clover	do.	8	9	10
66. Alsike	do.	12	9	10
68. Timothy	do.	23	27	14
75. Rotation pasture		860	660	700
76. Total sod crops		1,873	1,655	1,750
77. Total cropland used		6,833	6,990	6,992
79. Idle cropland		260	230	228
80. Total cropland		7,093	7,220	7,220
81. Other plowable pasture		848	721	721
82. Wild hay	Harvested	x	x	x
83. Other lands in farms		1,781	1,781	1,781
84. Total land in farms		9,722	9,722	9,722

Form 1b. NORTHEASTERN OHIO: Estimates of wartime use of cropland

Use of cropland	Acreage	Reported for 1941	Reported for 1942	Wartime maximum capacity
Column	1	2	3	7
		1,000 acres	1,000 acres	1,000 acres
1. Corn, all	Planted	495	489	464
7. Soybeans, grown alone	do.	122	189	191
8. Soybeans for beans	Harvested	64	142	119
9. Soybeans for hay	do.	52	36	72
20. Tobacco, all	do.			
22. Burley	do.			
23. Other domestic	do.			
25. Sugar beets	Planted	x	1	
26. Irish potatoes	do.	44	42	64
30. Processing vegetables, commercial	do.	2	5	7
31. Green peas	do.	x	x	x
32. Tomatoes	do.	x	1	2
33. Sweet corn	do.	1	4	4
34. Fresh vegetables, commercial	Harvested	10	9	15
35. Cabbage	do.	2	1	2
36. Onions	do.	1	1	2
37. Celery	do.	2	2	2
38. Carrots	do.	2	2	4
39. Cantaloupes	do.	1	1	1
40. Tomatoes	do.	2	2	3
42. Popcorn	do.	1	1	1
43. Total intertilled crops		674	736	742
44. Oats	Planted	368	372	341
45. Barley	do.	3	5	5
46. Winter wheat	do.	363	330	341
47. Spring wheat	do.			
48. Oats for grain	Harvested	360	366	336
49. Barley for grain	do.	3	5	5
50. Grains cut green for hay	do.	7	4	4
51. Rye for grain	do.	22	20	18
56. Buckwheat	Planted	5	7	5
59. Total small grains		761	734	710
60. Hay, all tame--except soybean, and small grain hay	Harvested	545	535	570
61. Hay, all tame	do.	604	575	646
62a. Seeds, not cut for hay	do.	18	19	20
62. Seeds, hay and cover crop, all	do.	53	42	50
63. Alfalfa	do.	1	x	
64. Red clover	do.	40	28	35
65. Sweet clover	do.	x	x	
66. Alsike	do.	5	3	5
68. Timothy	do.	7	11	10
75. Rotation pasture		146	146	150
76. Total sod crops		709	700	740
77. Total cropland used		2,144	2,170	2,192
79. Idle cropland		254	245	236
80. Total cropland		2,398	2,415	2,428
81. Other plowable pasture		523	506	493
82. Wild hay	Harvested	1	1	1
83. Other land in farms		1,459	1,459	1,459
84. Total land in farms		4,381	4,381	4,381

Use of cropland	Acreage	Reported for		Wartime maximum capacity
		1941	1942	
Column	1	2	3	7
		1,000 acres	1,000 acres	1,000 acres
1. Corn, all	Planted	711	741	720
7. Soybeans, grown alone	do.	134	149	163
8. Soybeans for beans	Harvested	33	74	89
9. Soybeans for hay	do.	94	70	74
20. Tobacco, all	do.	11	12	14
22. Burley	do.	11	12	14
23. Other domestic	do.			
25. Sugar beets	Planted			
26. Irish potatoes	do.	19	23	33
30. Processing vegetables, commercial	do.	2	2	3
31. Green peas	do.	x	1	1
32. Tomatoes	do.		x	x
33. Sweet corn	do.	2	1	1
34. Fresh vegetables, commercial	Harvested	2	3	4
35. Cabbage	do.	1	1	1
36. Onions	do.			
37. Celery	do.			
38. Carrots	do.	x	x	x
39. Cantaloupes	do.	x	x	x
40. Tomatoes	do.	1	1	2
42. Popcorn	do.	x	1	x
43. Total intertilled crops		879	931	937
44. Oats	Planted	106	127	148
45. Barley	do.	5	7	6
46. Winter wheat	do.	400	373	395
47. Spring wheat	do.			
48. Oats for grain	Harvested	90	110	134
49. Barley for grain	do.	4	6	5
50. Grains cut green for hay	do.	20	12	12
51. Rye for grain	do.	14	24	15
56. Buckwheat	Planted	2	3	2
59. Total small grains		527	534	566
60. Hay, all tame--except soybean, and small grain hay	Harvested	678	676	656
61. Hay, all tame	do.	792	758	742
62a. Seeds, not cut for hay	do.	26	23	25
62. Seeds, hay and cover crop, all	do.	40	45	43
63. Alfalfa	do.	x	x	
64. Red clover	do.	23	28	25
65. Sweet clover	do.		x	
66. Alsike	do.	4	2	3
68. Timothy	do.	13	15	15
75. Rotation pasture		433	433	400
76. Total sod crops		1,136	1,132	1,081
77. Total cropland used		2,542	2,597	2,584
79. Idle cropland		404	370	362
80. Total cropland		2,946	2,967	2,946
81. Other plowable pasture		1,850	1,829	1,829
82. Wild hay	Harvested	4	4	4
83. Other land in farms		3,005	3,005	3,026
84. Total land in farms		7,805	7,805	7,805